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June 22, 1995

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DOE/RFFO

SUBMITTAL OF 4-I48-ENV-OPS-FO 12, DECONTAMINATION FACILITY OPERATIONS -  
KB-091-95

Action Transmit procedure to regulators

Enclosed is procedure 4-I48-ENV-OPS-FO 12, *Decontamination Facility Operations*. The procedure has been carefully prepared by the Environmental Restoration Program Division procedures group, duly reviewed by appropriate Environmental Restoration Program Division organizations, and approved by Environmental Restoration Program Division management. We believe the procedure to be technically sound, and it is hereby submitted to you for appropriate action.

The procedure should be considered for transmittal to the regulators because no site procedure exists that will fulfill the requirements of this document. Good management practice requires methods of using and operating decontamination facilities. Unless otherwise directed by the Department of Energy/Rocky Flats Field Office, the Environmental Restoration Program Division will proceed with issuance of controlled working copies of this internally approved procedure while the appropriate external processes are carried out.

If you have any questions regarding the above, please call D G Breen, Environmental Project Services, at extension 6997.

CORRES CONTROL	X
ADMIN RECORD (0807)	X
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*Kaye Bentzen*

Kaye Bentzen  
Program Manager  
Environmental Data Management and Reporting Services

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Enclosure  
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IN REPLY TO RFP CC NO

ACTION ITEM STATUS  
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# Rocky Flats Environmental Technology Site

## 4-I48-ENV-OPS-FO.12

### REVISION 3

## DECONTAMINATION FACILITY OPERATIONS

APPROVED BY S.G. Stiger 1 S.G. Stiger 1 6-22-95  
 Director, Environmental Restoration Program Division Print Name Date

Stephen Luker 1 R S LUKER 1 6 21 95  
 Quality Assurance Manager, Data Management and Reporting Services Print Name Date

DOE RFFO/ER Submittal Required. ☐ Yes ☐ No ☐ NA

Environmental Protection Agency Review Required ☐ Yes ☐ No ☐ NA

Responsible Organization Environmental Restoration Program Division Effective Date

REVIEW BY THE FOLLOWING DISCIPLINES IS DOCUMENTED IN THE PROCEDURE HISTORY FILE

Environmental Operations Management  
 Industrial Hygiene  
 Occupational Safety  
 Radiological Health and Engineering  
 Data Management and Reporting Services

### USE CATEGORY 4

ORC review not required

The following have been incorporated in this revision  
 94-DMR-000178

This procedure supersedes procedure 5-21000-OPS-FO 12, Revision 2

Periodic review frequency 1 year from the effective date

Background information. No site procedure exists that will fulfill the requirements of this document. Good management practice requires proper methods of using and operating decontamination facilities

**LIST OF EFFECTIVE PAGES**

<u>Pages</u>	<u>Effective Date</u>	<u>Change Number</u>
1-34		

TOTAL NUMBER OF PAGES 34

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1. **PURPOSE**

This procedure lists responsibilities of the Designated Subcontractor (DSC) and the Decontamination Facility User (DFU) in the operation and use of the decontamination facilities. This procedure describes the process used at Rocky Flats Environmental Technology Site (Site) Decontamination Facilities (DF)

This procedure implements the requirements of the Health and Safety Practices Manual and of RF/ER-MP-QAPD, RFP Environmental Restoration Management Quality Assurance Program Description, Section 5 0, Work Processes

2. **SCOPE**

This procedure applies to all Site Contractor employees and subcontractors who conduct decontamination operations as part of the Environmental Restoration Program Division (ERPD), specifically to personnel using heavy and general equipment, environmental materials containers (drums), and environmental liquids in work areas characterized by the Site Contractor as potentially contaminated. This procedure also applies to environmental areas characterized as not potentially contaminated but where field monitoring conducted during intrusive activities indicates the possible presence of contamination

This procedure is not applicable to personnel using equipment in a work area characterized by the Site Contractor as not potentially contaminated and where no verified positive detections were encountered during field monitoring. However, equipment used in these work areas may be washed at the DF in accordance with 4-S01-ENV-OPS-FO 03, Field Decontamination Operations and 4-S02-ENV-OPS-FO 04, Decontamination of Equipment at Decontamination Facilities

This procedure addresses the following topics

- Maintaining and operating the DF
- Sampling environmental liquids and sump sediments at the DF

This revision is a total rewrite and revision bars are omitted. This revision supersedes 5-21000-OPS-FO 12, Revision 2, and is designated as Revision 3

### 3. OVERVIEW

Effective decontamination procedures are required to minimize the potential for cross-contamination, offsite contaminant migration, and personnel exposure from improperly decontaminated equipment. Heavy equipment, environmental materials containers, and environmental liquids may become contaminated when used in a work area characterized as potentially contaminated such as an Individual Hazardous Substance Site (IHSS), or when used in a work area characterized as not potentially contaminated but where field monitoring conducted during field activities indicates the possible presence of contamination. Because contamination is not always easily detectable, it is assumed that equipment used in either of the two preceding ways has been contaminated and will require decontamination.

Presently, a Main Decontamination Facility and a Protected Area Decontamination Facility exist at the Site, as shown in Appendix 1, Decontamination Facility Locations. The typical DF process flow diagram is shown in Appendix 2, Typical Decontamination Facility Process Flow Diagram. A DF consists of three functional areas: the equipment decontamination pad, the environmental liquids management area, and the drum transfer area. A typical DF pad layout is shown in Appendix 3, Typical Decontamination Pad Layout.

Additional equipment-specific decontamination guidance is available in the following procedures:

- 4-S01-ENV-OPS-FO 03, Field Decontamination Operations
- 4-S02-ENV-OPS-FO 04, Decontamination of Equipment at Decontamination Facilities
- 4-H66-ENV-OPS-FO 05, Handling of Purge and Development Water
- 4-E12-ER-OPS-FO 06, Handling of Personal Protective Equipment
- 5-21000-OPS-FO 07, Handling of Decontamination Water and Wash Water
- 4-K56-ENV-OPS-FO 08, Monitoring and Containerizing Drilling Fluids and Cuttings
- 4-K55-ENV-OPS-FO 10, Receiving, Marking, and Labeling Environmental Materials Containers

#### 3.1 Decontamination Pad Equipment

Decontamination pad equipment includes a curtain system, a sump for collection of environmental liquids and sediments, and a pumping system for moving fluids from the sump to the environmental liquids management area. Wet sediments are removed from the sump with a skidsteer or pumped with 3-in. trashpumps into 55-gal gray drums.

The DF uses a concrete pad capable of supporting large equipment for cleaning. The entrance and exit are sloped and curbed to contain and collect environmental liquids, solids, and sludge generated during cleaning operations. The approaches to the pad are sloped to allow equipment to be driven onto and off of the facility. A sump is located in the pad to collect waste materials.

### 3.1 Decontamination Pad Equipment (continued)

The DF operation typically uses gasoline-powered pumps and high pressure steam cleaners for day-to-day activities. A typical pump setup is shown in Appendix 3.

### 3.2 Environmental Liquids Management Area

The environmental liquids management area consists of a bermed area containing large storage and sedimentation tanks and is located between the bermed area and the decontamination pad. Environmental liquids collected in the bermed area are transferred to the sump. Secondary containment is installed under the entire DF.

The process of separating solids from the environmental liquids generated at the DF includes two cyclone separators in series. The separators remove a large portion of the suspended particles remaining in the environmental liquids.

The environmental liquids are pumped by using transfer Pump Number 1 through the cyclone separators into the first of three sediment tanks. Three sediment tanks are connected in line to provide additional removal of suspended solids. After initial settlement has occurred, the environmental liquids are allowed to flow to the subsequent sedimentation tanks by gravity flow. A typical tank set up is shown in Appendix 3.

### 3.3 Drum Transfer Area

The drum transfer area is the point at which the DSC transfers the drums containing sediments and solids from decontamination activities to Environmental Operations Management (EOM) representatives in accordance with 4-F99-ENV-OPS-FO 23, Management of Soil and Sediment Investigation-derived Materials (IDM).

## 4. DEFINITIONS

Decontamination Facility (DF) As used in the context of environmental materials management at the Site, a fixed facility that usually includes a paved and bermed area equipped with sumps, pumps, and pressurized sprays used to decontaminate large items that cannot be conveniently decontaminated in a relatively uncontrolled environment. The terminology DF should not be interpreted to refer to any specific Site DF.

Decontamination Facility Users (DFUs) Subcontractors using the facility to decontaminate their own equipment.

Individual Hazardous Substance Sites (IHSSs) Individual locations where hazardous substances are located at a discrete area within the Site.

Operable Unit (OU) IHSSs combined into a single management area as defined in the Rocky Flats Interagency Agreement (IAG) Statement of Work.



4. **Definitions (continued)**

**Sump** The initial collection area for sediments and decontamination liquids generated at the DF

5. **RESPONSIBILITIES**

5.1 **Decontamination Facility User (functional title)**

Coordinates with the DSC for the efficient use of the DF

Completes one or both of the following before arriving at the DF

- Predecontamination surveys in accordance with 4-B96-ER-OPS-EMRG-03 02, Survey Requirements for Conditional and Unrestricted Use
- Form FO 4-A3, Equipment Decontamination/Wash Checklist and Record, found in 4-S02-ENV-OPS-FO 04

Conducts decontamination of equipment.

Supplies the required personal protection equipment (PPE) for the decontamination of the respective equipment.

5.2 **DSC Decon Pad Personnel (functional title)**

Provides general use equipment for use at the DF

Performs routine maintenance and minor repairs to the DF and equipment used at the facilities

Manages environmental liquids and residual sediments brought to the DF

Conducts decontamination on equipment and materials as directed by the ERPD Project Manager

5.3 **DSC Site Manager**

Coordinates with the DFUs for the efficient use of the DF

Ensures that proper documentation of environmental liquids and sediment transferrals is maintained

**5.4     DSC Health and Safety Specialist (HSS)**

Performs DF inspections, as requested.

Ensures that all DF operations are performed safely and in accordance with the DF Health and Safety Plan (HASP)

Conducts daily or weekly radiological surveys at the DF

**5.5     DSC Sample Manager**

Coordinates with the Rocky Flats Environmental Database System (RFEDS) and the Site Contractor ERPD managers for sampling and transferral of environmental liquids and solids

Ensures that the required environmental liquids and sediment samples are collected and handled according to this and other applicable procedures specified in Section 9 0, Instructions—Sampling Environmental Liquids and Sump Sediments at the DF

**5.6     EOM Project Manager**

Ensures implementation of this procedure

Provides appropriate equipment to the subcontractor

Supervises the DSC in the operation and maintenance of the DF

**5.7     ERPD Sample Management**

Provides guidance to the DSC Sample Manager for sampling environmental media and coordinates with receiving laboratories.

**6.     TRAINING**

**DFU**

- [1] Ensure that all personnel are appropriately trained and qualified to perform the duties, tasks, and responsibilities of their assigned jobs, including
  - 40-hour OSHA Occupational Safety and Health Administration
  - Radiation Worker, Level 2
  - General Employee Training
  - Decontamination Facility User Training
- [2] Ensure that personnel training and qualification requirements for activities described in this procedure have been identified by ERPD Training and Qualification
- [3] Ensure that the Site Contractor ERPD subcontractor personnel meet the required training and qualifications specified by ERPD Training and Qualification

**6. TRAINING**

**DFU**

- [4] Ensure that documentation and verification of both ERPD-specific training and performance-based training has been documented by ERPD Training and Qualification

**7. MATERIALS AND EQUIPMENT**

**DSC**

- [1] Ensure that the following equipment is stored at or near the DF
- Sumps and tanks for the collection and holding of environmental liquids and sediments
  - One or more movable tanks for transferring Site clean water for use during decontamination
  - Polyvinyl chloride piping and fittings to convey water between various pieces of process equipment and environmental liquids tanks
  - Hoses (1-in , 2-in., and 3-in diameter) to convey environmental liquids to and from the various sumps, pumps, and tanks on a temporary basis
  - High pressure steam cleaner with high pressure wash and rinse systems
  - A rough terrain forklift or equivalent heavy equipment item outfitted with a drum grabber
  - A drum rack designed to hold empty 55-gal drums or 30-gal drums in a manner that promotes an outward flow of decontamination liquids from the drum interior as it is being decontaminated
  - A trash can for containerizing uncontaminated environmental materials
  - A two-wheeled dolly designed to carry 55-gal drums
  - Plastic sheeting
  - Long- and short-handled stiff bristle brushes
  - Wire brushes (used for decontaminating steel objects)
  - Wash and rinse buckets for decontaminating equipment interiors
  - Premoistened towelettes and Kimwipes
  - Anemometer and windsock to allow decontamination workers to determine the wind speed and direction
  - Wash and rinse buckets to decontaminate DFU boots
  - pH indicating test paper

**DFU**

- [2] Provide the following equipment and supplies for use at the DF
- PPE as required by the DF HASP
  - Environmental materials containers (obtained from the Site Contractor) for nonreusable items required to remove soil dislodged during decontamination
  - An organic vapor monitor or detector (OVM or OVD) and other detectors [such as Bicon Frisk A-100 ( $\alpha$ ), Ludlum Model 31 with 44-9 Probe ( $\beta/\gamma$ ), Bicon FIDLER, and a Ludlum 2929 removable ( $\alpha\beta/\gamma$ )] to screen equipment and environmental materials containers
  - Wash and rinse buckets necessary to clean small items

## 8. INSTRUCTIONS—MAINTAINING AND OPERATING THE DF

This section is organized topically rather than sequentially to correspond to the various operational tasks associated with the operation of the DF

**NOTE**     *Specific operating instructions and safety guidelines for DF equipment are found in 4-I11-ER-OPS-FO 30, Environmental Restoration Management Division Equipment Operation*

### 8.1 Planning and Coordination

#### DSC Site Manager

- [1] Ensure that DF operations are planned in accordance with the DF HASP
- [2] Ensure that all DSC personnel have reviewed the DF HASP to determine the appropriate PPE to use during the various DF operations and have completed the DF procedure training
- [3] Maintain a roster of DFUs and a point of contact to receive information regarding the operation of the DF
- [4] Maintain a list and notify DFUs of Site groundwater wells which are characterized as hazardous and from which purge water cannot be disposed of at the DF
- [5] Establish a priority of use for the DF as follows
  - 1 Radiological Engineer Designated Contaminated Equipment
  - 2 Standby Drillers
  - 3 Scheduled DFUs
  - 4 All other DFUs
- [6] Schedule foreseeable periods of downtime and notify other subcontractors of both scheduled and unscheduled periods of downtime
- [7] Schedule the use of rough terrain forklift and skid loaders
- [8] Coordinate with the Site Contractor Decontamination Facility Operations Engineer for Tanker Truck Requirements
- [9] Coordinate with ERPD Sample Management if sampling demands exceed normal requirements
- [10] Coordinate with the DFU and the EOM Project Manager at the weekly Plan of the Day (POD) meeting

**8.1 Planning and Coordination (continued)**

**DFU**

- [11] Coordinate with DSC on an as-need basis on such items not scheduled during the POD meeting
- [12] Review 4-S02-ENV-OPS-FO 04 before initiating any DF operations
- [13] Review the DF HASP to determine the appropriate PPE to use during the various DF operations

**8.2 Daily DF Inspections and Repairs**

**EOM Project Manager**

- [1] Perform a daily inspection of the environmental liquids tanks at the DF
  - [A] Conduct radiological and facility inspections when the DF is nonoperational
- [2] Record observations on the Hazardous Waste Management Storage/Treatment Tank Daily Inspection Sheet in accordance with 1-10000-HWR, Hazardous Waste Requirements Manual, Section 12
- [3] Report any deficiencies immediately to the DSC Site Manager for corrective action

**DSC Decon Pad Personnel**

- [4] Visually inspect the DF to verify that the required equipment and supplies are on hand and operational
- [5] Complete Form FO 12A in accordance with Appendix 4, Decontamination Pad Equipment Daily Inspection Checklist
  - [A] Record the date in the form heading
  - [B] Inspect each listed decontamination pad equipment item on Form FO 12A for acceptability, checking [✓] either the *Accept* or *Nonaccept* block, as appropriate
  - [C] Notify the DSC Site Manager immediately of an unacceptable item
  - [D] Record the liquid transferral and sampling information
  - [E] Record the monitoring results
  - [F] Print name, subcontractor name and phone number, and sign

## 8.2 Daily DF Inspections and Repairs (continued)

### DSC Decon Pad Personnel (continued)

- [6] IF the splash screens have been removed or torn,  
THEN reinstall the splash screens and repair any small tears by applying duct tape or equivalent over the tear on both sides of the screens

Significant tears in the screen require replacement

- [7] Check oil and fuel levels on DF equipment and fill as needed
- [8] Monitor the following with an OVM or OVD in accordance with 5-21000-OPS-FO 15, Photoionization Detectors (PID) and Flame Ionization Detectors (FID)
- DF pad floor surface sump
  - General work area
  - Sedimentation tanks
  - Leak detection system monitoring pipe
- [9] Prepare the steam cleaner for daily operations per the manufacturer's instructions
- [10] Conduct a weekly inspection of the DF drums within the drum transfer areas until the drums are transferred to EOM

The weekly drum inspections are documented on Form FO 10B, Drum Field Log QA/QC Form

## 8.3 Routine Maintenance of the DF

### DSC Decon Pad Personnel

- [1] Perform routine maintenance on equipment by following the instructions in the equipment owner manuals and the applicable procedures.
- [2] Fill the clean water tank to supply fluids for decontamination.
- [3] Pump the liquids from the sump into the sedimentation tanks and then into a storage tank in accordance with Subsection 8 4
- [A] IF a sufficient amount of sediment has accumulated in the sump after the liquid has been pumped,  
THEN handle the sediment in accordance with Sections 8 7, Transferring Sediments from the Sump into Drums and 9 2 2, Sampling Sump Sediments
- [4] Use the high pressure steam cleaner to de-ice the DF, as necessary

### 8.3 Routine Maintenance of the DF (continued)

#### DSC Decon Pad Personnel (continued)

- [5] Drain and winterize all the equipment that could be damaged as a result of freezing fluids, as necessary
  - [A] Do NOT use ethylene glycol as an antifreeze in any of the pressurized spray systems
- [6] WHEN the containers at the DF are full of PPE waste,  
THEN dispose of the waste PPE in accordance with 4-E12-ENV-OPS-FO 6, Handling of Personal Protective Equipment.

### 8.4 Transferring Environmental Liquids from the DF Sumps

The function of the sump sediment transfer system is to separate solids from decontamination environmental liquids and then transfer these liquids to sedimentation tanks and return solids to the sump. The environmental liquids are transferred from the sump upon reaching acceptable levels of suspended solids as visually determined by the DSC.

**NOTE** *Emergency shutdown procedures are initiated when there is a problem with the transfer of liquid from the sump to the separation equipment. In the event of an emergency shutdown, the DSC will contact the Site Contractor Project Manager. Problems that may occur include line breakage, pump malfunction, and hose or fitting malfunction. Any problem with liquid transfer requires the pump be shut down to stop any additional liquid from entering the system. Once the pump is shut down, the problem is isolated and any further spillage or leakage is prevented by correcting the malfunction.*

#### **CAUTION**

1. Failure to open the valve to sediment Tanks 2 and 3 prior to initiation of transfer operations will result in the overflow of Tank 2.
2. Failure to monitor the transfer of liquids into sediment or storage tanks may result in an overflow into the secondary containment.

#### DSC Decon Pad Personnel

- [1] WHEN the liquids are at or below the sump grates,  
THEN transfer environmental liquids collected in the DF sump with Pump Number 1 through the cyclone separators into sediment Tank 1.
- [2] Allow the environmental liquids to stand for 24 hr or until the sediments have settled to the bottom of sediment Tank 1.

#### 8.4 Transferring Environmental Liquids from the DF Sumps (continued)

##### DSC Decon Pad Personnel (continued)

- [3] Open the top gate valve on sediment Tank 1, 20 degrees to allow the liquids to gravity feed into sediment Tank 2, until full
- [4] Close the top gate valve on sediment Tank 1
- [5] Allow the environmental liquids to stand for 24 hr or until the liquids are visually clear
- [6] Open the top gate valve and the bottom gate valve on Sediment Tank 1 to allow additional environmental liquids to gravity flow into Sediment Tank 2, which simultaneously pushes the clean liquids into Sediment Tank 3
- [7] WHEN both sediment Tanks 2 and 3 are full,  
OR sediment Tank 1 is empty,  
THEN close the top and bottom gate valves on Sediment Tank 1
- [8] Allow both tanks to settle for an additional 24 hr or until Sediment Tank 3 is visually clear

**NOTE**     *Turbidity samples can be taken before transferring environmental liquids from sediment Tank 3 into a storage tank if the DSC pad personnel require quantifiable information. The desired limit set by the EOM treatment facility is less than 5 NTU*

- [9] Transfer the clean liquid from Sediment Tank 3 into an assigned storage tank through the cyclone filtration system into the proper storage tank manifold outlet with Pump Number 1
- [10] Repeat this operation until Sediment Tanks 1, 2, and 3 have been emptied

#### CAUTION

**Failure to shut down the pump during problems with liquid transfer will result in additional liquid entering the system.**

- [11] Disconnect all pumps and hoses used to transfer liquids from the DF sump and sediment tanks.
- [12] WHEN the storage tank is filled to the criteria noted above,  
THEN disconnect the transfer hoses at the storage tank manifold connection
- [13] Close the manifold valve for the filled storage tank



#### 8.4 Transferring Environmental Liquids from the DF Sumps (continued)

##### DSC Decon Pad Personnel (continued)

- [14] Secure the manifold cap for the filled storage tank.
- [15] Drain the liquid from the hoses into the DF sump
- [16] IF there is a potential for freezing,  
THEN drain the pumps
- [17] Open the bottom sediment drain valve on Sediment Tank 1 to allow the sediments to drain onto the DF Decon Pad and into the sump
- [18] WHEN the sediments begin to visually clear,  
OR the tank is empty,  
THEN close the bottom sediment drain valve on Sediment Tank 1
- [19] WHEN the 2500-gal storage tank is filled within 1 ft of the top of the tank,  
OR approximately 2400 gal have accumulated,  
THEN allow the liquids to stand undisturbed for at least 48 hr before sampling

This process allows for further settling of sediments and reduced turbidity

#### 8.5 Transferring Well Purge Water into Sediment Tanks

Environmental liquids are containerized, handled, and transferred to the DF in accordance with 5-21000-OPS-FO 7 and 4-K55-ENV-OPS-FO 10 Procedure 4-H66-ENV-OPS-FO 05, contains the process for handling well purge water

##### DFU

- [1] Log in at the DF before transferring purge water

##### DSC Decon Pad Personnel

- [2] Connect the purge water inlet hose to Pump Number 1
- [3] Connect the pump outlet hose to the cyclone filters and sediment Tank 1
- [4] Place the inlet hose in the purge water tank.
- [5] Start the pump and operate until the purge water tank is empty
- [6] Shut the pump off
- [7] Remove hoses from the tanks, cyclone filters, and Pump Number 1

**8.6      Transferring Liquids From Storage Tanks to Tanker Trucks**

**DSC Decon Pad Personnel**

- [1]    Connect one end of the designated suction hose to the Pump Number 2 inlet and place the other end into the designated storage tank.
- [2]    Connect the designated outlet hose to the top outlet connection on Pump Number 2
- [3]    Connect the free end of the outlet hose to the tanker truck
- [4]    Open the air vent valve on the back of the tanker truck.
- [5]    Open the water valve on the back of the tanker truck
- [6]    Place a drip pan under the hose connection at the tanker truck
- [7]    Start the pump and transfer the liquids from the storage tank into the tanker truck
- [8]    **WHEN** the storage tank is empty of liquids,  
         **THEN** shut the pump off
- [9]    Close the vent valve on the tanker truck
- [10]   Close the water valve on the tanker truck.
- [11]   Disconnect the outlet hose from the tanker truck.
- [12]   Place the outlet hose end into Sediment Tank 2
- [13]   Disconnect the outlet hose from Pump Number 2
- [14]   Drain the outlet hose into Sediment Tank 2.
- [15]   Pull the inlet hose out of the storage tank and place the hose into sediment Tank 3
- [16]   Disconnect the inlet hose from Pump Number 2
- [17]   Drain the inlet hose into Sediment Tank 3
- [18]   Roll and store the hoses in the designated storage area.
- [19]   Drain and store Pump Number 2.
- [20]   Check all the valves and lids for security
- [21]   Label the tanker truck in accordance with 1-94700-Traffic-110, On-site Transportation Manual

**8.6 Transferring Liquids From Storage Tanks to Tanker Trucks (continued)**

**DSC Decon Pad Personnel (continued)**

- [22] Notify the Site Contractor DF Project Manager that the tanker is full

**8.7 Transferring Sediments from the Sump into Drums**

The transfer of sump sediments is undertaken immediately after the sampling activities have been completed. The preparation of the drums and ancillary equipment is completed before the sampling activities begin. Soil and sediment samples are handled in accordance with 4-B35-ENV-OPS-FO 13, Containerizing, Preserving, Handling, and Shipping of Samples.

**DSC Decon Pad Personnel**

- [1] Prepare gray drums for the sediment transfer
  - [A] Request drums from the EOM Project Manager
  - [B] Obtain and stage drums on the DF Pad
  - [C] Install one rigid and one plastic liner in each drum
  - [D] Record the drum numbers on Form FO 10A, Drum Field Log Form, and initiate an onsite waste traveler
- [2] Prepare ancillary equipment.
  - [A] Prime the diaphragm trash pump with water
  - [B] Attach the 20-ft inlet and outlet hoses to the diaphragm trash pump
- [3] Don the appropriate PPE in accordance with the DF HASP
- [4] Transfer the sediment into the drums
  - [A] Turn on the diaphragm trash pump and fill the drum with sediment.
  - [B] **WHEN** the sediment is within 6 in. of the rigid liner top,  
**THEN** remove the hose to the next drum
- [5] **WHEN** all of the drums are filled,  
**THEN** shut off the pump
- [6] Twist the plastic liner down and place the rigid liner lid inside the drum
- [7] Install the drum lid and band.
- [8] Clean off the outside of the drum

## 8.7 Transferring Sediments from the Sump into Drums (continued)

### DSC Decon Pad Personnel (continued)

- [9] Label drum in accordance with 4-K55-ENV-OPS-FO 10
- [10] Tighten the drum lid band bolt loosely and set the drums at the end of the DF Pad
- [11] Place a drum wick on the lid
- [12] Dismantle the pumps and hoses
- [13] Decontaminate all the equipment used during the process
- [14] WHEN the sediments have settled for one week,  
THEN 'decant the drums and move the drums to the drum transfer area
  - [A] Return decanted liquids to the sump
- [15] Add a Site Contractor approved absorbent
- [16] Remove the PPE and handle in accordance with 4-E12-ENV-OPS-FO 06
- [17] Move the drums to the drum transfer area

## 8.8 Conducting Radiological Surveys at the DF

Radiological smear surveys are conducted on splash screens, separators, tanks, and powered equipment in accordance with 5-21000-OPS-FO 16, Field Radiological Measurements. The release limits for removable contamination are referenced in 4-B96-ER-OPS-EMRG-03 02, Survey Requirements for Conditional and Unrestricted Use.

**NOTE 1** *Both the Bicron and Ludlum instruments listed in this section are used to establish fixed contamination levels*

**NOTE 2** *All of the instruments listed read out in counts per minute (cpm). Similar instruments may be approved for survey use through Rocky Flats Instrumentation*

### DSC HSS

- [1] Conduct weekly radiological surveys at the close of each week, or as required by radiological engineers using the following instruments to detect the specified types of radioactivity
  - Bicron Frisk Tech with an A-100 alpha detector probe for alpha contamination
  - Ludlum Model 31 with a 44-9 probe for beta and gamma contamination
  - Count smears with the Ludlum Model 2929 Dual Scaler for removable contamination
  - Bicron FIDLER for low level gamma radiation

**8 8 Conducting Radiological Surveys at the DF (continued)**

**DSC HSS (continued)**

- [2] Record the radiological survey results on Form EMRG 1 1B, Contamination Survey Form in accordance with 3-21000-OPS-EMRG-1 1, Gamma Radiation Surveys

**8.9 Decontamination Operations at the DF**

All decontamination operations at the DF are conducted in accordance with 4-S02-ENV-OPS-FO 04 The DFUs are responsible for the decontamination of their respective equipment DSC Decon Pad personnel are responsible for the decontamination of Site Contractor equipment.

**WARNING**

Failure to cease all decontamination operations when the wind alarm is sounding in accordance with 5-21000-OPS-FO.1, Air Monitoring and Dust Control, could result in the release of contaminants into the surrounding area.

**DSC Decon Pad Personnel/DFU**

- [1] Don PPE, as appropriate
- [2] Observe all of the health and safety requirements posted at the DF and presented in the DF HASP
- [3] IF the high pressure steam cleaner is used,  
THEN close the splash screen.
- [4] IF the planned decontamination activities are likely to cause the sump to overflow,  
THEN request DSC personnel to pump the DF floor drain sump
- [5] Stand upwind while decontaminating equipment.
- [6] Use the Buddy System in accordance with the DF HASP while decontamination activities are being conducted.
- [7] Decontaminate items from different work areas separately
- [8] Steam clean all surfaces within the screened portion of the DF after each use, including the DF screens
- [9] Open and tie down curtains
- [10] Return the stands and equipment to the specified areas

**8.9 Decontamination Operations at the DF (continued)**

**DSC Decon Pad Personnel/DFU (continued)**

- [11] Remove PPE and handle in accordance with 4-E12-ENV-OPS-FO 06, as appropriate

**8.10 Disposal of Field Decontamination Liquids at the DF**

Environmental liquids accumulated during the decontamination of sampling equipment at the satellite, or remote, sampling locations are disposed of using the process described in this section

**DFU**

- [1] Notify the DSC Site Manager by radio upon arrival at the DF and monitor the DSC channel while using the DF
  - [A] Inform the DSC Site Manager of any transfer requirements
- [2] Log in at the DF
- [3] Don the proper PPE
- [4] Transfer the satellite tank to DF sump or sediment tanks as directed by DSC personnel
- [5] Pour liquids carefully into the sump or sediment tanks
- [6] Remove and dispose of PPE in accordance with 4-E12-ENV-OPS-FO 06
- [7] Notify DSC Site Manager upon completion of the transfer operation and departure from the DF

9.       **INSTRUCTIONS—SAMPLING ENVIRONMENTAL LIQUIDS AND SUMP  
SEDIMENTS AT THE DF**

The DF sampling plans provide sampling parameters and environmental liquids treatment facility acceptance criteria. Procedure 4-B35-ENV-OPS-FO 13 contains additional information on the containerization, preserving, handling, and shipping of samples

9.1       **Preparing for a Sampling Event**

**DSC Sample Manager**

[1]   Prepare the chain of custody (COC) forms

- [A]   Select two radiochemistry COCs and one general chemistry COC for the sampling event.
- [B]   Use the next consecutive sample number from the Sampling Log for the DF (as determined by sample media and analyses) for the sampling event being prepared for
- [C]   Fill in the COC number and dates on the Sampling Log so that the sample number is not used twice
- [D]   Complete the two radiochemistry COCs and one general chemistry COC selected above and leave the samplers, time, air bill number, and relinquished by blocks blank.
- [E]   Insert the COCs into a 10 X 12 in resealable plastic bag

[2]   Print the sample bottle labels

- [A]   Locate the label spreadsheet found on the Sampling Labels computer disc
- [B]   Print the labels and place in the bag with the COCs

[3]   Prepare the custody seals.

- [A]   Locate the custody seals and count out the number required for the total number of sample bottles being shipped

[4]   Sign and date each seal and insert them into the plastic bag containing the labels and COCs

9.1 Preparing for a Sampling Event (continued)

**NOTE** *Preservatives are added to certain environmental liquid samples. The DF sampling plans provide a list of preservatives and a holding time schedule, or ERPD Sample Management can be contacted for the information.*

**DSC Sample Manager (continued)**

[5] Insert the preservatives into the clean, empty sample bottles that will be used for holding water samples collected from the storage tanks

[A] Open the windows for cross ventilation.

[B] Remove two 1-liter plastic bottles, three 40-ml glass vials, and one 250-ml plastic bottle from the storage cabinet.

[C] Don the acid proof apron, nitrile gloves, and face shield

**WARNING**

**Due to the incompatibility of acid types, handling of more than one acid at a time could result in a reaction and possible injury to the handler.**

[D] Adjust the  $\text{H}_2\text{SO}_4$  pipettor to 0.8 ml

[E] Pipette 0.8 ml of  $\text{H}_2\text{SO}_4$  acid into each 250-ml plastic bottle

[F] Place the cap onto each sample bottle and write  $\text{H}_2\text{SO}_4$  on the cap

[G] Adjust the  $\text{HNO}_3$  pipettor to 3.20 ml

[H] Pipette 3.20 ml of  $\text{HNO}_3$  into the two 1-liter plastic bottles

[I] Place the cap onto each sample bottle and write  $\text{HNO}_3$  on the caps

[J] Obtain the HCL eyedropper

[K] Place 3 drops of HCl into each VOA vial using the eyedropper

[L] Place the cap onto each VOA vial and write HCl on the caps

[6] Prepare the sampling cooler and related supplies

[A] Insert the plastic bag containing the COCs into the cooler

[B] Place the required bottles and plastic bags into the sampling cooler



## 9.1 Preparing for a Sampling Event (continued)

### DSC Sample Manager (continued)

- [C] Obtain an additional 250-ml plastic bottle and write TURBIDITY on the lid
- [D] Obtain a 1-gal plastic bottle and place both the 1-gal bottle and the Turbidity bottle into the cooler
  - A bag is not needed for the 1-gal bottle
- [E] Place Blue Ice into the cooler to maintain the 4° C preservative requirements
- [F] IF the sampling event is for the collection of decontamination water samples, THEN:
  - [a] Refill the de-ionized water bottle and place it in the cooler
  - [b] Obtain the following
    - Geo-pump and 0.45 micron high capacity disposable filters
    - Medical grade silicon tubing from the small storage cabinet
    - 7-ft point source bailer
- [G] Obtain a full-face respirator and cartridges for the person opening the storage tank lid
- [H] Verify that the OVM or OVD has been calibrated daily
- [I] Transport the sampling supplies and equipment to the location to be sampled
- [J] Triple rinse the point source bailer with deionized water

## 9.2 Sampling Event

Procedure 4-B29-ENV-OPS-FO 14, Field Data Management includes instructions for handling field data and coordinating with RFEDS.

### 9.2.1 Sampling Decontamination Liquids

#### DSC Sample Manager

- [1] Don the appropriate PPE and respirator before cracking the lid on the storage tank to be sampled
- [2] Use the OVM or OVD in accordance with the DF HASP Manual to determine if organic vapors are present

**9.2.1 Sampling Decontamination Liquids (continued)**

**DSC Sample Manager (continued)**

- [3] IF the OVM or OVD indicates the presence of organic vapors,  
THEN allow the storage tank to vent in 1-hr increments until OVM monitoring indicates that organic vapors are at a level safe enough to continue the sampling process
- [4] IF the OVM or OVD does NOT indicate the presence of organic vapors,  
THEN remove the respirator
- [5] Open the bailer and slowly lower it into the water, stopping approximately 6 in. above the settled sediments
- [6] Close the bailer, remove it and empty the water into the 1-gal container
- [7] Repeat Steps [5] and [6] until the sample bottle is full
- [8] Fill and recap all of the sample containers except one of the bottles containing  $\text{HNO}_3$
- [9] IF 1 gal is not enough volume to fill all sample containers,  
THEN more sample water may be added to the 1-gal container, repeating Steps [5] and [6] to complete the filling of all the sample bottles and provide for Step [10] requirements
- [10] Retain at least 1/3 gal of water in the 1-gal container for filtering
- [11] Rinse off any of the sample water that may have spilled on the outside of the sample bottles
- [12] Replace the lid on the storage tank and transport the sampling supplies to the health and safety shed
- [13] Decontaminate the sampling bailer in accordance with 4-S01-ENV-OPS-FO 03
- [14] Filter the remaining sample water from the 1-gal container through the Geo-pump and filter into the remaining 1-liter bottle containing  $\text{HNO}_3$
- [15] Ensure that the pH of the water sample in the bottles containing the acid preservatives is  $\leq 2.0$  pH
- [16] Perform radiological surveys on the sample bottles in accordance with 4-B96-ER-OPS-EMRG-03 02
- [17] Position a custody seal lengthwise over the caps and apply the appropriate label to each sample bottle

### **9.2.1 Sampling Decontamination Liquids (continued)**

#### **DSC Sample Manager (continued)**

- [18] Place the sample bottles in the appropriate size plastic bag and place the package in the cooler
- [19] Keep the lid of the cooler closed as much as possible to retain the required 4° C temperature inside the cooler
- [20] Remove the PPE and handle in accordance with 4-E12-ENV-OPS-FO 06
- [21] Transport the cooler and supplies to the shipping area

### **9.2.2 Sampling Sump Sediments**

#### **DSC Sample Manager**

- [1] Don the appropriate PPE and monitor the organic vapors over the sump
- [2] Remove the grates and mix sediments with the scoop and skidsteer
- [3] Fill the stainless steel pitcher from eight randomly selected locations in the sump and mix the contents of the pitcher with the hand scoop
- [4] Carefully pour the contents of the pitcher into each of the sample bottles
- [5] Wash off any sediment that was spilled on the outside of the bottles
- [6] Go to Step 9 2 1[16]

### **9.2.3 Storing Samples**

#### **DSC Sample Manager**

- [1] Make an entry in the Sampling Log Book for the sampling event
- [2] Screen the samples in accordance with 5-21000-OPS-FO 18, Environmental Sample Radioactivity Content Screening.
  - [A] Count the smears
  - [B] Frisk the bottles
  - [C] Have the HSS clear the samples for shipment
- [3] Place the chemistry suite in the refrigerator
- [4] Place the radiological screening samples in the sample storage locker

### 9.2.3 Storing Samples (continued)

#### DSC Sample Manager (continued)

- [5] Replace the other sampling supplies in their designated locations

### 9.3 Shipping Environmental Samples

- [1] Prepare samples for shipping and ship samples in accordance with 4-B35-ENV-OPS-FO 13 and 4-B11-ER-OPS-FO 25, Shipment of Radioactive Materials Samples

- [2] Complete Appendix 5, Environmental Sample Packaging Checklist during the shipping process

## 10. RECORDS

Management of all records is consistent with 1-77000-RM-001, Records Management Guidance for Records Sources

#### DSC Decon Pad Site Manager

- [1] Ensure that the original and one copy, as required, of the following quality assurance (QA) records are transmitted to the ERPD Project File Center (PFC) in accordance with 2-G18-ER-ADM-17 01, Records Capture and Transmittal
- Form FO 04-A3, Equipment Decontamination/Wash Checklist and Record
  - Form FO 12A, Decontamination Pad Equipment Daily Inspection Checklist
  - Form FO 10A, Drum Field Log Form
  - Form FO 10B, Drum Field Log QA/QC Form
  - Form EMRG 1.1B, Contamination Survey Form
  - Activities log book

Submission of record copies to the ERPD PFC satisfies Administrative Record requirements as defined in 2-S65-ER-ADM-17 02, Administrative Record Document Identification and Transmittal

There are no non-QA records generated by this procedure.

## 11. REFERENCES

Health and Safety Practices Manual

Main and Protected Area Decontamination Facilities, Health & Safety Plan

RF/ER-MP-QAPD, RFP Environmental Restoration Management Quality Assurance Program Description, Section 5 0, Work Processes

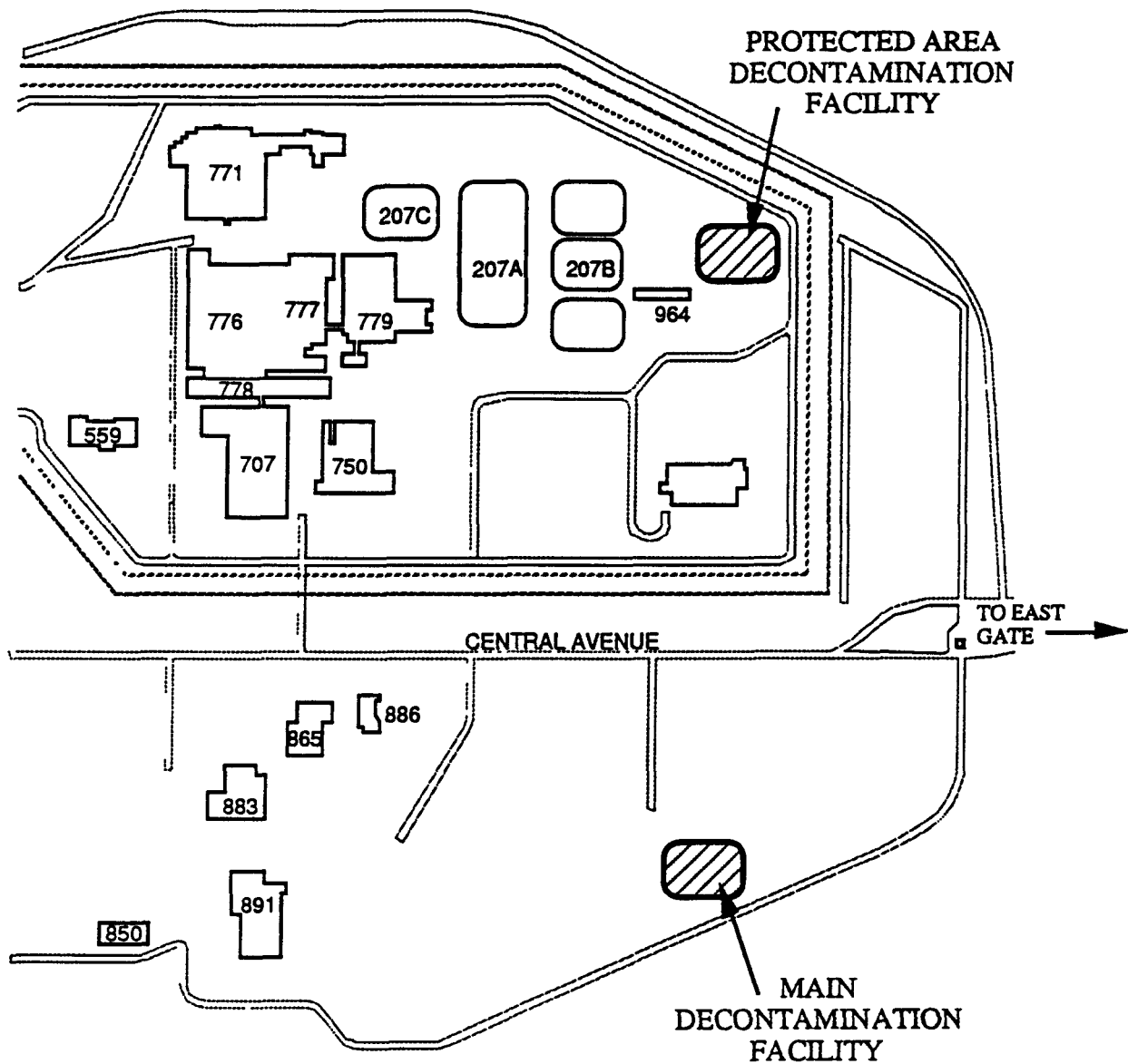
1-94700-Traffio-110, On-site Transportation Manual

**11. REFERENCES (continued)**

- 1-10000-HWR, Hazardous Waste Requirements Manual, Section 12
- 1-77000-RM-001, Records Management Guidelines for Record Sources
- 2-G18-ER-ADM-17 01, Records Capture and Transmittal
- 2-S65-ER-ADM-17 02, Administrative Record Document Identification and Transmittal
- 3-21000-OPS-EMRG-1 1, Gamma Radiation Surveys
- 4-B11-ER-OPS-FO 25, Shipment of Radioactive Materials Samples
- 4-B29-ENV-OPS-FO 14, Field Data Management
- 4-B35-ENV-OPS-FO 13, Containerizing, Preserving, Handling, and Shipping of Samples
- 4-B96-ER-OPS-EMRG-03 02, Survey Requirements for Conditional and Unrestricted Use
- 4-E12-ENV-OPS-FO 6, Handling of Personal Protective Equipment
- 4-F99-ENV-OPS-FO 23, Management of Soil and Sediment Investigation-derived Materials
- 4-H66-ENV-OPS-FO 05, Handling of Purge and Development Water
- 4-I11-ER-OPS-FO 30, Environmental Restoration Program Division Equipment Operation
- 4-K55-ENV-OPS-FO 10, Receiving, Marking, and Labeling Environmental Materials Containers
- 4-K56-ENV-OPS-FO 08, Monitoring and Containerizing Drilling Fluids and Cuttings
- 4-S01-ENV-OPS-FO 03, Field Decontamination Operations
- 4-S02-ENV-OPS-FO 04, Decontamination of Equipment at Decontamination Facilities
- 5-21000-OPS-FO 1, Air Monitoring and Dust Control
- 5-21000-OPS-FO 07, Handling of Decontamination Water and Wash Water
- 5-21000-OPS-FO 15, Photoionization Detectors (PIDs) and Flame Ionization Detectors (FIDs)
- 5-21000-OPS-FO 16, Field Radiological Measurements
- 5-21000-OPS-FO 18, Environmental Sample Radioactivity Content Screening

APPENDIX 1  
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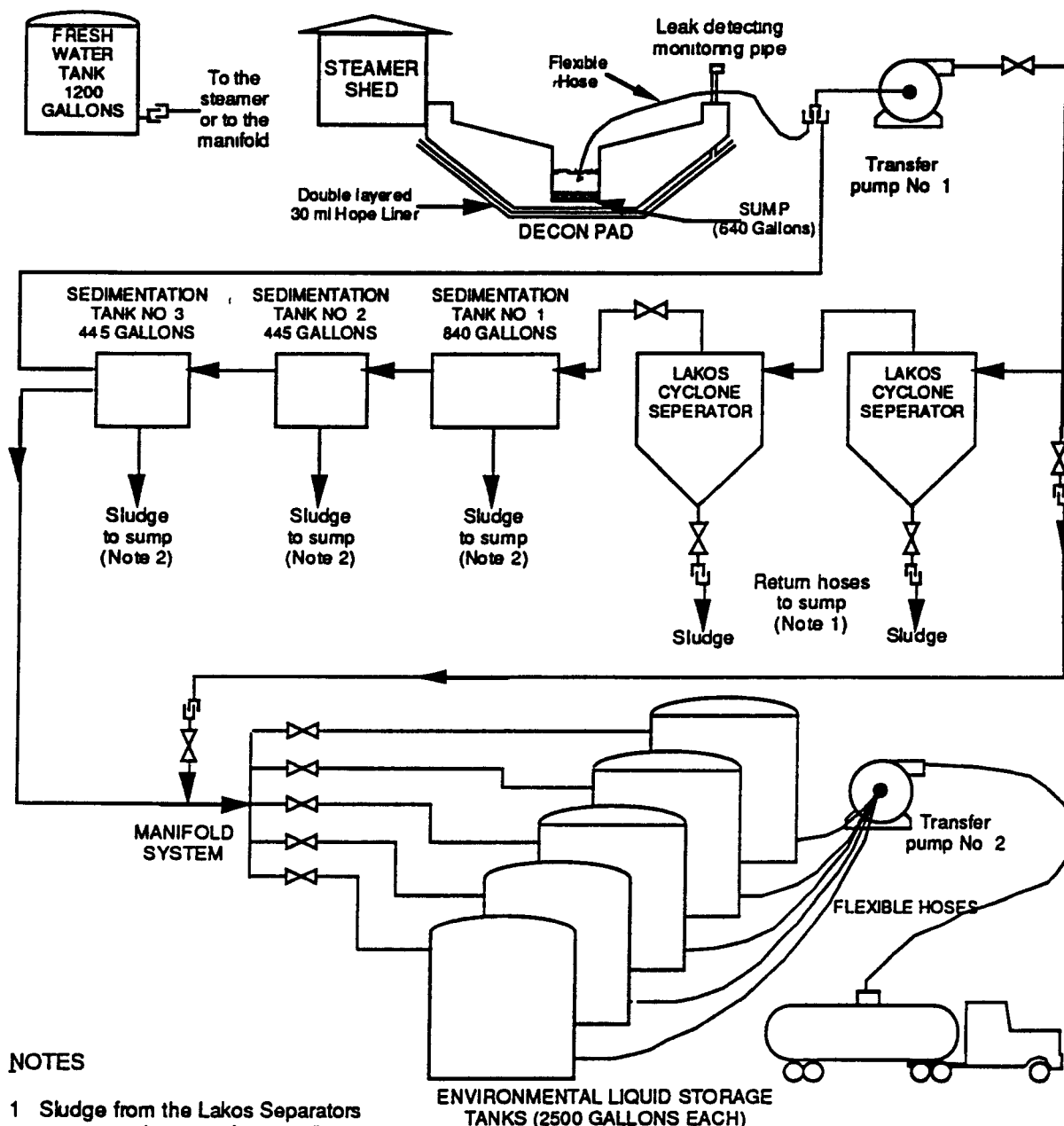
DECONTAMINATION FACILITY LOCATIONS



## APPENDIX 2

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### TYPICAL DECONTAMINATION FACILITY PROCESS FLOW DIAGRAM



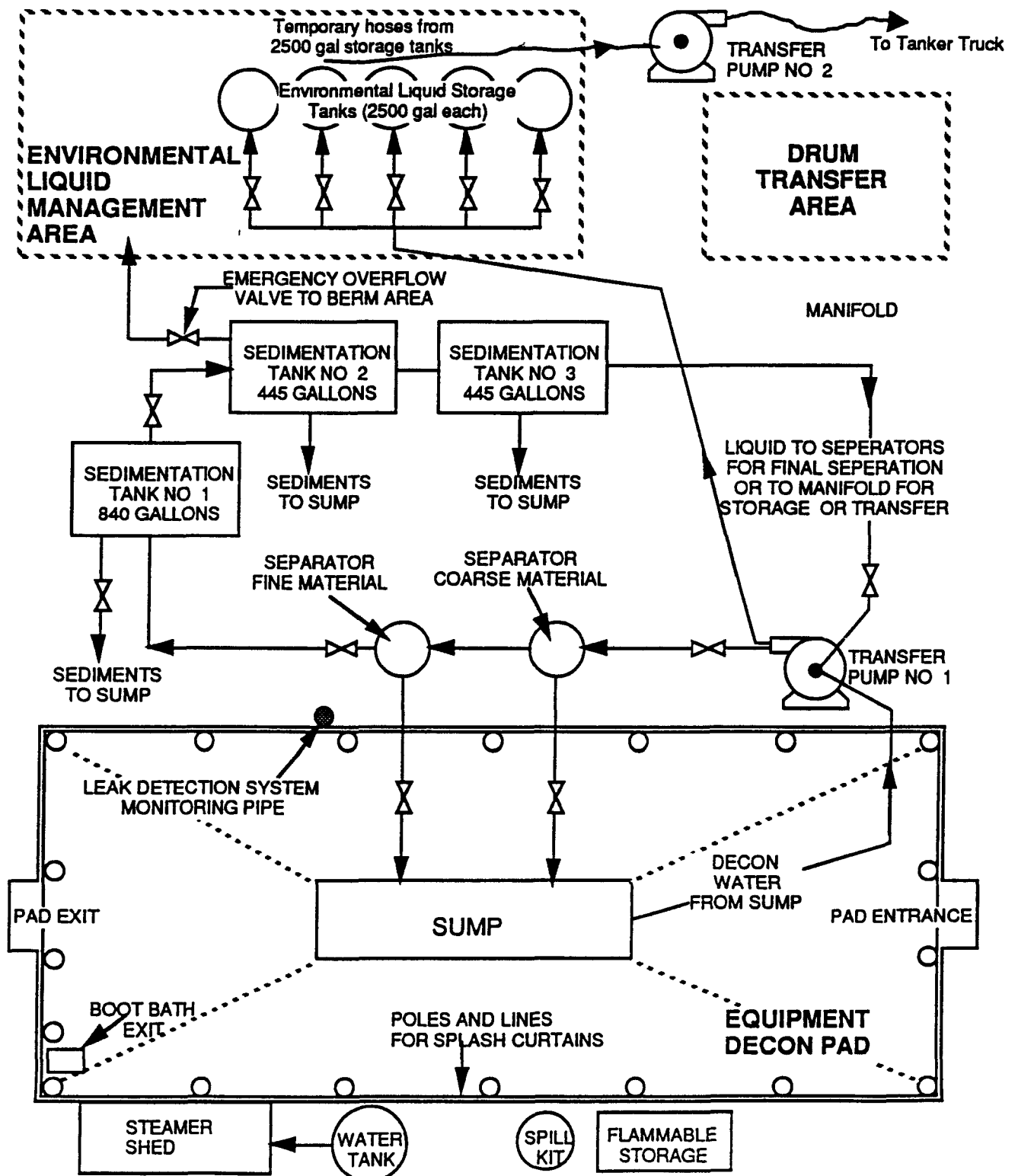
#### NOTES

- 1 Sludge from the Lakos Separators returns to the sump for sampling
- 2 Sludge from the three sedimentation tanks is removed by hand and returned to the sump for sampling
- 3 Water from from the third sedimentation tank can be returned to the Lakos Separators via transfer pump No 1 if the water is determined, through visual inspection, to be clear
- 4 Transfer Pump No 1 also transports water through the manifold and into the selected storage tanks
- 5 Flexible hoses can be used to allow Transfer Pump No 2 to transport water from the storage tanks through the manifold and to the tanker truck

**APPENDIX 3**

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**TYPICAL DECONTAMINATION PAD LAYOUT**





**APPENDIX 4**

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**FORM FO.12A**

<p><i>Rocky Flats</i> <b>Environmental Technology Site</b> <b>ENVIRONMENTAL RESTORATION</b> <b>PROGRAM DIVISION</b></p>	<p><b>DECONTAMINATION PAD EQUIPMENT</b> <b>DAILY INSPECTION CHECKLIST</b></p>	<p><b>Form FO.12A</b> <b>REVISION 2</b></p>																																						
<p><b>Facility and Equipment Inspection</b> <span style="float: right;">Date _____</span></p> <p>Facilities and Equipment Operational. <input type="checkbox"/> Yes <input type="checkbox"/> No (If no, explain and describe corrective action)</p> <p>The Decontamination Equipment Pad is visually inspected at the beginning of each day of Environmental Restoration Program Division (ERP) field operations. All deficiencies should be reported to the Decontamination Operations Manager immediately. Decontamination operations should not commence until all deficiencies have been corrected.</p>																																								
<p><b>DECONTAMINATION PAD EQUIPMENT</b></p> <ol style="list-style-type: none"> <li>1 Check fill slope for excessive erosion or cracking</li> <li>2 Check fill slope for unusual staining which may be indicative of leakage.</li> <li>3 Check copolymer pad coating for cracking, peeling, bubbling, staining, or any unusual appearance</li> <li>4 Check concrete decontamination pad for cracking, chipping, spalling, or any unusual appearance.</li> <li>5 Check that floor sump has been pumped clean of any liquids.</li> <li>6 Check splash screens for any tears and inspect integrity of previous repairs</li> <li>7 Inspect all tanks, joints, gauges, pipes, and couplings for any drips, leaks, residues, or signs of corrosion</li> <li>8 Inspect berms around environmental liquids management area for breaches, cracks, and/or signs of excessive erosion.</li> <li>9 Estimate the remaining capacity in each of the environmental liquids tanks as well as the sedimentation tanks</li> <li>10 Ensure that decontamination fluid and rinse fluid reservoir levels are adequate.</li> <li>11 Check tank tie downs and make sure they are tight.</li> <li>12 Inspect monitor pipe weekly for fluid leaking to the inner liner</li> <li>13 Ensure that all signs and labels are in place</li> </ol>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">ACCEPT</th> <th style="width: 15%;">NON ACCEPT</th> <th style="width: 70%;">COMMENTS</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	ACCEPT	NON ACCEPT	COMMENTS																																				
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<p><b>DF Waste Management Activities</b></p> <p>Liquid Waste Holding Tanks Sampled. _____</p> <p>Tank(s) Number(s) _____</p> <p>DF Pad Sampling Liquid Pumped and Dredger Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No (if No, explain)</p>																																								
<p><b>Results of DF Facility and Equipment Monitoring</b></p> <table style="width: 100%;"> <tr> <td style="text-align: center;">OVM _____ ppm (pad)</td> <td style="text-align: center;">RAD _____ / (cpm) (cpm)</td> <td style="text-align: center;">OVM _____ ppm (mont pipe)</td> <td style="text-align: center;">OVM _____ ppm (1st Sed Tank)</td> <td style="text-align: center;">OVM _____ ppm (2nd Sed Tank)</td> <td style="text-align: center;">OVM _____ ppm (3rd Sed Tank)</td> </tr> </table>			OVM _____ ppm (pad)	RAD _____ / (cpm) (cpm)	OVM _____ ppm (mont pipe)	OVM _____ ppm (1st Sed Tank)	OVM _____ ppm (2nd Sed Tank)	OVM _____ ppm (3rd Sed Tank)																																
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<p>Print Name _____ Subcontractor _____ Phone _____</p> <p>(Signature) _____</p>																																								

**APPENDIX 5**

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**ENVIRONMENTAL SAMPLE PACKAGING CHECKLIST**

**SAMPLE # \_\_\_\_\_ COOLER # \_\_\_\_\_ COC # \_\_\_\_\_**

1. This checklist is used for all environmental samples.
2. Sample packager verifies and initials concurrence for all of the items listed below.

**Initials**

- \_\_\_\_\_ Sample lab locations are correct.
- \_\_\_\_\_ A plastic bag is in the cooler.
- \_\_\_\_\_ Vermiculite has been placed in the bottom of the cooler
- \_\_\_\_\_ Bottle labels match the COC when placing the bottles in the cooler.
- \_\_\_\_\_ Custody tape is on the bottles.
- \_\_\_\_\_ Glass samples are bubble wrapped.
- \_\_\_\_\_ Samples are contained in plastic bags
- \_\_\_\_\_ Voids are filled with vermiculite.
- \_\_\_\_\_ The cooler bag is sealed.
- \_\_\_\_\_ The cooler contains adequate blue ice for non-rad samples
- \_\_\_\_\_ The Federal Express Airbill number is included on the COC.
- \_\_\_\_\_ The relinquishing signature, date and time must be included on the COC
- \_\_\_\_\_ Two copies of the Quality Control COC are retained.
- \_\_\_\_\_ A return address label has been placed on the top of the cooler bag.
- \_\_\_\_\_ The top two originals of COC are contained in the plastic bag in the cooler The bottom two originals of the COC are retained
- \_\_\_\_\_ The RADSCREEN is enclosed for general chemistry and radio chemistry shipments.
- \_\_\_\_\_ Strapping tape is wrapped around the cooler.
- \_\_\_\_\_ Verify lab address label is correct and *CAUTION* and *UP* labels are on the cooler
- \_\_\_\_\_ Custody tape is placed on the cooler
- \_\_\_\_\_ The Federal Express Airbill is complete.
- \_\_\_\_\_ The PRE & Material Transfer Tags are completed with one copy inserted into the Federal Express pouch on cooler and the originals are stapled and retained.

Name \_\_\_\_\_ Signature \_\_\_\_\_

Employee # \_\_\_\_\_ Date \_\_\_\_\_